

### **Abstract**

An area-efficient fully integrated BiCMOS analog time delay circuit with low-power supply requirements provides delays as long as two milliseconds. An  
5 ultralow PTAT current source comprises medium-value resistors to discharge an on-chip capacitor from a fixed zero-temperature coefficient voltage. The comparator monitors the capacitor voltage and changes stage from low to high when the capacitor is discharged below a reference voltage having a defined negative temperature coefficient. The temperature coefficient of the reference voltage generator and the PTAT current  
10 source are such that the timeout period is independent of temperature in the first-order. The generated timeout delay is independent of the supply voltage and can be used with a supply voltage as low as two volts.